



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/612,633	07/07/2000	Tomio Mituhashi	1341.1008-D/JDH	8985

21171 7590 03/14/2003

STAAS & HALSEY LLP
700 11TH STREET, NW
SUITE 500
WASHINGTON, DC 20001

EXAMINER

LEUNG, CHRISTINA Y

ART UNIT	PAPER NUMBER
----------	--------------

2633

DATE MAILED: 03/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/612,633

Applicant(s)

MITUHASHI, TOMIO

Examiner

Christina Y. Leung

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2002.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 11, 12, 14-17, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Takezawa et al. (US 4,625,333 A).

Regarding claim 11, Takezawa et al. disclose an optical communication unit (Figures 5-9) provided in an apparatus for executing communication with a communicating partner by using optical signals, the optical communication unit comprising:

a light emitting section 14 to transmit an optical signal to the apparatus;

a light receiving section 16 to receive an optical signal from the apparatus

a frame to house the light emitting section and the light receiving section (such as shown externally as element 3 in Figure 1, or also as shown as structure 81 in Figures 8 and 9);

a first converging lens 61 attached to the frame, to converge the optical signal transmitted by the light emitting section and to transmit the converged optical signal to the apparatus; and

a second converging lens 62 attached to the frame, to converge the optical signal transmitted by the apparatus and to transmit the converged optical signal to the light receiving section;

Takezawa et al. further disclose a shielding section to optically shield light between the first converging lens and the second converging lens. Figures 5-9 show shielding elements 20

and 22 supported by various ring elements 21A-B, 22A-B, 23, and 24, which providing further shielding (column 8, lines 6-23), and Figures 8 and 9 show how the body of the structure, element 81, may be extended between the transmitting and receiving sections, including between the two lenses, where it would shield light between the lenses in particular.

Regarding claim 12, Takezawa et al. disclose a connecting section 2 with an optical cable unit (including fibers 26 and 27), wherein the optical communication unit transmits and receives optical signal to and from the apparatus via the optical cable unit (Figure 1; see also element 73 in Figures 6-7 and elements 82 and 83 in Figures 8-9).

Regarding claim 14, Takezawa et al. disclose an optical communication unit provided between two apparatuses that perform optical communication with each other (Figure 5-9), the optical communication unit transmitting and receiving optical signals from and to the apparatuses, the optical communication unit comprising:

- a connector (such as elements 2 and 3 shown in Figure 1) connected to any one of the apparatuses;

- a signal transmitting/receiving section including a light receiving section 16 to receive an optical signal from the one of the apparatuses, and a light emitting section 14 to transmit an optical to the one of the apparatuses;

- an optical cable (element 1 shown in Figure 1; see also fibers 26 and 27 shown in Figures 5-9) to transmit the optical signal to and from the light receiving section and the light emitting section; and

- a frame to house one end of the optical cable and the signal transmitting/receiving section (Figure 1 shows the exterior frame of the unit; Figures 8-9 show how one end of the optical

cable, elements 82-83, fit together with the transmitting/receiving section, element 81, within a frame or housing), and including at least one window (such as lenses 61 or 62 in Figures 5-9, windows 19 and 21 in Figure 2, or window 41 shown in Figure 3) to pass the optical signal from the one of the apparatuses to the light receiving section, and to pass the optical signal from the light emitting section to the one of the apparatuses.

Regarding claim 15, Takezawa et al. disclose that the optical cable has a pair of paths (fibers 26 and 27) to transmit and receive optical signal from an to the optical of the apparatuses respectively.

Regarding claim 16, Takezawa et al. disclose a shielding section (comprising shields 20 and 22, and also rings 21A-B, 22A-B, 23, and 24 shown in Figures 5-9; column 8, lines 6-23) to prevent incidence of an optical signal from the light emitting section to the light receiving section.

Regarding claim 17, Takezawa et al. disclose that the unit may further comprise a first converging lens (such as lens 61) to converge an optical signal from the one of the apparatuses and transmit the optical signal into the optical cable; and

a second converging lens (such as lens 62) to converge an optical signal transmitted through the optical cable and transmit the optical signal to the one of the apparatuses.

Takezawa et al. also disclose the use of a lens in conjunction with a window (Figure 3 shows lens 32 and window 41; column 3, lines 6-22), and therefore discloses a unit including a separate window that is not itself a lens.

Regarding claim 24, Takezawa et al. disclose an optical communication unit provided in an apparatus and having a light transceiver section to transmit/receive an optical signal to and

from the apparatus for executing communication with a communication device (Figures 5-9), the optical communication unit comprising:

a frame (shown externally in Figure 1; see also element 81 shown in Figures 8-9) to house the light transceiver section;

a first converging lens 61 attached to the frame, to converge the optical signal transmitted by the light transceiver section (by emitter 14) and to transmit the converged optical signal to the apparatus; and

a second converging lens 62 attached to the frame, to converge the optical signal transmitted by the apparatus and to transmit the converged optical signal to the light transceiver section (at receiver 16).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takezawa et al. as discussed above with regard to claim 11 and further in view of Kobayashi (US 5,986,785 A)

Regarding claim 13, Takezawa et al. disclose a system as discussed above with regard to claim 11, but they do not specifically disclose a filter which cuts off light to both the emitting section and the detecting section.

It is well known in the art that a filter may be used to block unwanted light from an optical receiver. It is also well known in the art that a filter may be used to further ensure that

light from an emitter is of a particular wavelength range. Kobayashi in particular teach that a single optical filter may also be placed in front of a light emitting section and a light receiving section arranged next to each other (Figure 1B; column 2, lines 58-67; column 3, lines 1-8). It would have been obvious to a person of ordinary skill in the art to use a filter in order to block out unwanted light as taught by Kobayashi in front of the emitting and receiving sections disclosed by Takezawa et al., and it also would have been obvious to a person of ordinary skill in the art to arrange the filter in front of both the emitting and receiving sections as shown by Kobayashi as an engineering design choice of a way to arrange the elements as desired.

5. Claims 19, 22, and 23 are is rejected under 35 U.S.C. 103(a) as being unpatentable over Takezawa et al. as applied to claim 14 above, and further in view of Tsuji et al. (US 5,664,035 A).

Regarding claim 22 in particular, Takezawa et al. disclose that the light receiving section and the light emitting section are integrated to each other (Figures 5-7 and 9 show how the two sections are integrated on the same substrate 11).

Regarding both claims 19 and 22, they further disclose converging lenses 61 and 62 arranged in paths of the optical signal. However, Takezawa et al. do not specifically disclose that the unit further comprises a converging lens arranged in light paths of the optical signal from the one of the apparatuses to the light receiving section and the optical signal from the light emitting section to the one of the apparatuses,

Similarly, regarding claim 23, Takezawa et al. do not specifically disclose that the light receiving section and the light emitting section are realized with one lens.

However, Tsuji et al. teach a light emitting section 222 and a light receiving section 221 integrated to each other and covered with one lens, converging lens 231 (Figures 2a-b). They also teach that the converging lens 231 converges a signal from the apparatus to the cable 41 as well as from the cable to the apparatus (Figure 2a). Regarding claims 19, 22, and 23, it would have been obvious to a person of ordinary skill in the art to use a converging lens as taught by Tsuji et al. instead of the two lenses disclosed by Takezawa et al. as an engineering design choice of an alternative way to focus and guide the incoming and outgoing signals between the optical fiber and the optical components. The claimed differences exist not as a result of an attempt by Applicants to solve an unknown problem but merely amount to the selection of expedients known as design choices to one of ordinary skill in the art.

6. Claims 14, 15, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Streck et al. (US 5,241,410 A) in view of Takezawa et al.

Regarding claim 14, Streck et al. disclose an optical communication unit (repeater 56 shown in Figure 14; see also Figure 13 which shows repeater 56 connected between telepoint 12 and another repeater 56) provided between two apparatuses that perform optical communication with each other, the optical communication unit transmitting and receiving optical signals from and to the apparatuses, the optical communication unit comprising:

a signal transmitting/receiving section including a light receiving section 74 to receive an optical signal from the one of the apparatuses (such as telepoint 12), and a light emitting section 82 to transmit an optical to the one of the apparatuses;

an optical cable (including fibers 64 and 66) to transmit the optical signal to and from the light receiving section and the light emitting section; and

Streck et al. do not specifically disclose a frame, but it is well known in the art that transmitting/receiving sections such as disclosed by Streck may be covered by some external frame in order to protect the circuitry. In particular, Takezawa et al. disclose a transmitting/receiving section (Figures 1 and 5-9) including a frame to house an end of an optical cable and the transmitting/receiving section, and including at least one window (such as windows 19 and 21 in Figure 2 or lenses 64 and 66) to pass the optical signal from the one of the apparatuses to the light receiving section, and to pass the optical signal from the light emitting section to the one of the apparatuses. It would have been obvious to a person of ordinary skill in the art to provide a frame with at least one window as taught by Takezawa et al. as a way to protect the transmitting/receiving circuitry and align the transmitter and receiver to the optical fibers in the system disclosed by Streck et al.

Streck et al. also do not specifically disclose a connector connected to one of the apparatuses, but it is well known in the art that a coupler or other connecting section may be used to connect an apparatus to an optical cable. Takezawa et al. also teach how a connector may be used to connect an optical cable (Figure 1 shows how the optical cable may be connected to the transmitting/receiving section). It would have been obvious to a person of ordinary skill in the art to specifically include a connecting section as taught by Takezawa et al. in the system disclosed by Streck et al. to ensure that the apparatus 12 (for example) is securely coupled to the optical fibers 64 and 68.

Regarding claim 15, Streck et al. disclose that the optical cable has a pair of paths for transferring optical signals in different directions respectively (Figure 14).

Regarding claim 18, Streck et al. further disclose that the light receiving section has a first modulating/demodulating section (photodetector 74 and emitter 76) to receive an optical signal transmitting from the one of the apparatuses and convert the optical signal to an electric signal, and also to demodulate the electric signal to an optical signal and transmit the optical signal into the optical cable. The photodetector 74 they disclose converts the optical signal received from the apparatus into an electrical signal; the emitter 76 converts the electrical signal into an optical signal for transmission into the cable.

Streck et al. further disclose that the light emitting section has a second modulating/demodulating section (emitter 82 and photodetector 84) to receive the optical signal transferred through the optical cable and to convert the optical signal to an electric signal, and also to demodulate the electric signal to an optical signal and transmit the optical signal to the one of the apparatuses. The photodetector 84 receives and converts the optical signal from the cable to an electrical signal; emitter 82 converts the electrical signal into an optical signal for transmission to the apparatus.

7. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takezawa et al. or Streck et al. in view of Takezawa et al. as applied to claim 14 above, and further in view of Helot et al. (US 5,781,177 A).

Regarding claim 20, Takezawa et al. and Streck et al. in view of Takezawa et al. disclose systems as discussed above with regard to claim 14. Neither Takezawa et al. nor Streck et al. specifically disclose that the light receiving section may be changed according to a speed of an optical signal. However, it is well known in the art that optical signals transmitted at different speeds may have different characteristics at the receiver, such as different amounts of signal

losses or errors. Helot et al. (Figures 1 and 4) teach that a light receiving section may switch between two different areas depending on characteristics of the incoming signal. In particular, they teach a receiver 40 for high-speed communications and a receiver 42 for low-speed communications. It would have been obvious to a person of ordinary skill in the art to include different receiving devices suited for different communication speeds as taught by Helot et al. in the systems disclosed by Takezawa et al. or Streck et al. in view of Takezawa et al. in order to optimize reception of signals with different characteristics.

8. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takezawa et al. or Streck in view of Takezawa et al. as applied to claim 14 above, and further in view of Nguyen (US 5,940,209 A).

Regarding claim 21, Takezawa et al. and Streck et al. in view of Takezawa et al. disclose systems as discussed above with regard to claim 14. Neither Takezawa et al. nor Streck et al. specifically disclose that the light receiving section may be changed according a transmission distance of an optical signal. However, it is well known in the art that optical signals transmitted across different distances may have different characteristics at the receiver, such as different amounts of signal loss. Nguyen teaches that a light receiving section may change according to a transmission distance of an optical signal; in particular, Nguyen teaches changing an amplification of an optical signal according to a transmission distance of the signal column 3, lines 4-14). It would have been obvious to a person of ordinary skill in the art to include a circuit which adjusts according to a transmission distance of the signal as taught by Nguyen in the systems disclosed by Takezawa et al. or Streck et al. in view of Takezawa et al. in order to optimize reception of signals with different characteristics.

Response to Arguments

9. Applicant's arguments with respect to claims 11-23 have been considered but are moot in view of the new ground(s) of rejection.

Examiner also respectfully disagrees with Applicant's assertion on page 6 of their response that Takezawa et al. do not disclose a frame or first and second converging lenses (see rejections based on Takezawa et al. made above).

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 703-605-1186. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

Application/Control Number: 09/612,633
Art Unit: 2633

Page 12

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703-305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.



JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600